

Claims

1. A wireless communication unit (300) incorporating a receiver, the receiver comprising:
    - 5 radio frequency circuitry (210, 220, 230, 240) for receiving a radio frequency signal and converting said radio frequency signal to a low frequency signal;
    - a signal level adjustment circuit for receiving said low frequency signal;
  - 10 an analogue to digital converter (370), operably coupled to said signal level adjustment circuit for receiving an adjusted low frequency signal and providing a digital received signal; and
  - 15 a signal processor (108) operably coupled to the analogue to digital converter (370) for processing said digital received signal;
  - 20 wherein the receiver is characterised by said signal level adjustment circuit including a low frequency amplifier (360) whose gain is arranged to be dependent upon a clip point of said analogue to digital converter (370).
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2. The wireless communication unit (300) according to claim 1, wherein the signal level adjustment circuit is further characterised by a dynamic compressor function (362), operably coupled to said low frequency amplifier (360) for limiting a signal output from said low frequency amplifier (360).

3. The wireless communication unit (300) according to claim 2, wherein the gain of said low frequency amplifier (360) is arranged to be dependent upon a clip point of said dynamic compressor function (362).

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4. The wireless communication unit (300) according to Claim 3, wherein the gain of said low frequency amplifier (360) is arranged to be dependent upon the clip point of said dynamic compressor function (362) subtracted by the 10 clip point of said analogue to digital converter (370).

5. The wireless communication unit (300) according to any of Claims 2 to 4, wherein said signal level adjustment circuit is further characterised by a fixed 15 attenuator (365) operably coupled to said dynamic compressor function (362) to attenuate a received signal output from said dynamic compressor function (362) to below a clip point threshold of said analogue to digital converter (370).

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6. The wireless communication unit (300) according to Claim 5, wherein said fixed attenuator (365) is arranged to be dependent upon a clip point of said analogue to digital converter (370).

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7. The wireless communication unit (300) according to Claim 5 or Claim 6, wherein said fixed attenuator (365) is arranged to be dependent upon a clip point of said dynamic compressor function (362).

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8. The wireless communication unit (300) according to  
Claim 7 when dependent upon Claim 6, wherein said fixed  
attenuator (365) is arranged to be dependent upon the  
clip point of said dynamic compressor function (362)  
5 subtracted by the clip point of said analogue to digital  
converter (370).

9. The wireless communication unit (300) according to  
any preceding Claim, wherein said low frequency  
10 components are at an intermediate or baseband frequency.

10. The wireless communication unit (300) according to  
any preceding Claim, wherein said receiver has a high  
dynamic range, for example in excess of 100 dB.

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11. The wireless communication unit (300) according to  
any preceding Claim, wherein said signal level adjustment  
circuit negates a need for an automatic gain control  
circuit.

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12. The wireless communication unit (300) according to  
any preceding Claim, wherein the wireless communication  
unit is a subscriber unit or a base transceiver station  
operating in a wireless communication system.

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13. The wireless communication unit (300) according to  
Claim 12 wherein the subscriber unit is one of a portable  
or mobile PMR radio, a mobile phone, a personal digital  
assistant, a wireless capable laptop computer.

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14. The wireless communication unit (300) according to any preceding Claim, wherein the received signal is a digitally modulated signal.

5 15. The wireless communication unit (300) according to Claim 14, wherein the receiver is a linear receiver for receiving said digitally modulated signal.

10 16. A method of signal reception for a wireless communication unit (300), the method comprising:

receiving a radio frequency signal (210, 220, 230, 240) and converting said radio frequency signal to a low frequency signal;

15 adjusting the signal level of said low frequency signal;

analogue to digital converting (370) the signal with an analogue to digital converter (370) after said signal level adjustment step, thereby providing a digital received signal; and

20 signal processing (108) of the said digital received signal;

wherein the method is characterised by said signal level adjustment circuit including low frequency amplification (360) with a gain arranged to be dependent upon a clip point of said analogue to digital converter (370).